



**COGENT**  
DATA SOLUTIONS

## **Data Warehouse Assessment**

How to Assess and Evaluate the Deployment  
of an Enterprise Data Warehouse

# **Whitepaper**

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## Introduction

Data is considered to be a strategic asset of any business today as the entire scope of business operations is dependent upon the availability of consistent, accurate and timely data. If the company is using wrong data to make decisions at any level of business operations, many aspects of the business will not turn out right. Whether it is about day-to-day business operations or about the establishment of long term strategic plans of an organization, lack of appropriate data can lead to incorrect decision-making, and in turn cause harm to businesses.

This makes the creation and maintenance of an Enterprise Data Warehouse within an organization extremely important so that the company can move towards better and effective business operations. An EDW is a large information database that acts as an integrated source of data across the entire organization, fulfilling all data needs within an organization. It provides consistent, synchronized, accurate and timely data to the right people so that it can be analyzed and used for business decision-making.

A data warehouse can be established along different levels, and a mature EDW can bring most value to a business. In order to understand where the current data warehouse of a company stands, a data warehouse assessments needs to be carried out. An assessment is the only way organizations can understand how they can establish their data warehouse and use them it to the maximum of its capabilities. Cogent Data Solutions provide companies with a professional EDW assessment solution, helping them analyze their current data warehouse infrastructure and help them improve it to the desired output level.



# Why an Enterprise Data Warehouse Is Important?

*Business departments including finance, marketing, product development, manufacturing and strategy development use the data from the warehouse as their main source of information that they can analyze for further decision-making and reporting.*

The importance of an enterprise Data Warehouse as a single, unified source of data for the entire organization is significant for all business operations. The use of a data warehouse in a company is relevant across all departments of business. Business departments including finance, marketing, product development, manufacturing and strategy development use the data from the warehouse as their main source of information that they can analyze for further decision-making and reporting.

Consider an organization that needs to make urgent decision on some new product development ideas and needs information about its customers. In case of the absence of a data warehouse, the company would access the applications that are used in different operational departments to retrieve relevant data. Usually, these applications store data in transactional form, and the company would need to process and filter data in order to get the information it needs about the master data element; customers. But what if the data collected from these different departmental applications doesn't reconcile?

The company would have to work a lot on figuring out what went wrong with the data, and the point where the error occurred, and this would take a lot of time. Considering the fact that the company wanted to act urgently, this is definitely not going to be a value-adding procedure for a company. Real-time problems with data like the one mentioned above make it extremely important for companies to invest in EDW solutions. The presence of a data warehouse means that accurate, processed and consistent information regarding different factors is readily available and can be accessed by the business management whenever needed.

Table 1. Examples of Business Solution with EDW

Function	EDW Solutions Benefit
Finance	<ul style="list-style-type: none"> <li>▶ Complete the monthly planning and forecasting cycle in days instead of weeks.</li> <li>▶ Ensure availability of raw data to analyze "budget versus actual" and sales to forecast."</li> <li>▶ Ensure accessibility, accuracy and traceability, specially crucial for Sarbanes-Oxley compliance.</li> </ul>
Marketing and Sales	<ul style="list-style-type: none"> <li>▶ Increase customer lifetime value by examining data to identify up-sell and cross-sell opportunities to customer with the most potential.</li> </ul>
Long-range Strategy	<ul style="list-style-type: none"> <li>▶ Provide a foundation for future growth, including mergers and acquisition.</li> <li>▶ Enable a holistic view of the business - understanding what drives the business beyond basic financial operations.</li> <li>▶ Examine pros and cons of a merger such as which products, customers or geographies are driving sales growth and profitability.</li> </ul>

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Function	EDW Solutions Benefit
Product Development	▶ Facilitate the flow of accurate customer requirements and product reliability data for product development. (A medical equipment company might feed clinically data to R&D to accelerate time -to-market.)
Manufacturing	▶ Manage supply chains and partner relationships for a manufacturing firm requires the granular details of inventory by product, time and vendor.

## Creating Competitive Advantage

At the heart of every successful organization, a data warehouse could be found functioning round the clock, helping companies gain an edge over their competitors on the basis of timely and accurate data. The data warehouse enables business management throughout an organization to make analysis and take decisions regarding key business operations. These decisions are responsible for bringing a growth in the revenues, profits, efficiency and productivity of an organization. The presence of a data warehouse makes these decisions more profitable and well-informed. With the availability of timely data, businesses can spot new emerging markets and trends in a marketplace before the competition. Taking advantage of this knowledge, the company can then develop new products and service offerings for their customers that are not being offered by their competition. The company can also spot up-selling and cross-selling opportunities among different customer groups, taking up their profitability through increased sales.

## Bringing Consistency to Business Practices

Data within an organization can only be used to make good decisions when it is consistent across all departments. It is important for businesses to have their data processed to bring it into a consistent structure while maintaining a cost-effective and efficient way of doing it. If the company relies on departments making data reconciliations among themselves using their own applications every time data is needed, the cost of labor-intensive tasks and lost opportunity can be extremely high.

If a company has a structured system of collecting consistent data like a data warehouse, a large number of business decisions and reporting features can be automated. These automated business decisions brings more efficiency to a business while freeing up their management staff to focus on other important and critical decisions. In areas like supply-chain operations and financial reporting, this automation can increase accuracy and efficiency remarkably. Asset management and other back-end operations also benefit from these automated decisions, making a data warehouse an even more value-adding function for a business.

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Increased regulatory requirements also force businesses to maintain a better record of their data, in an accurate and timely manner. This makes the presence of a data warehouse extremely important for an organization since it already has all the data elements a business would require to keep up with regulations. These business drivers and the benefits they can bring to an organization make it imperative for businesses to establish and maintain an Enterprise Data Warehouse as the backbone for all their operations.

## What Is Enterprise Data Warehouse Assessment

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## Why an EDW Assessment Is Needed

Data warehousing is a continuous business process that should be managed with an on-going focus to ensure that it grows as the company adopts new business practices. A system of check-and-balance needs to be established to analyze the performance of a data warehouse from time to time, ensuring that its current performance is in line with business goals, and if not, how can they be managed more optimally. An EDW assessment helps companies realize where their data warehouse stands, and whether it has reached the maturity level they wanted it to gain or not. A company can improve its data warehouse using the results of these assessments so that it can treat its data as an organizational asset and manage it in the best way possible.

## When an EDW Assessment Should Be Conducted in an Organization

An EDW assessment is carried out when a company wants to know the performance level of its data warehouse. Usually, a company expects to use its data warehouse for different purposes, expecting it to provide a certain level of functionality. There are five levels of data warehouse maturity, and a warehouse serves different business purposes at these levels. The five different levels of an EDW maturity include "understand", "change", "grow", "compete" and "lead".

When a data warehouse is first established, it usually starts at the base where most of its key functions are directed towards making business management understand and analyze the key data elements of an organization. In order to get to a point where a company can use its data warehouse to gain a competitive advantage and lead the market on the basis of its data sources, its warehouse needs to attain a higher level of maturity. If a company thinks its data warehouse needs improvement in order to get ahead in its performance, it needs to carry out an EDW assessment so that the performance-expectation gap can be met.

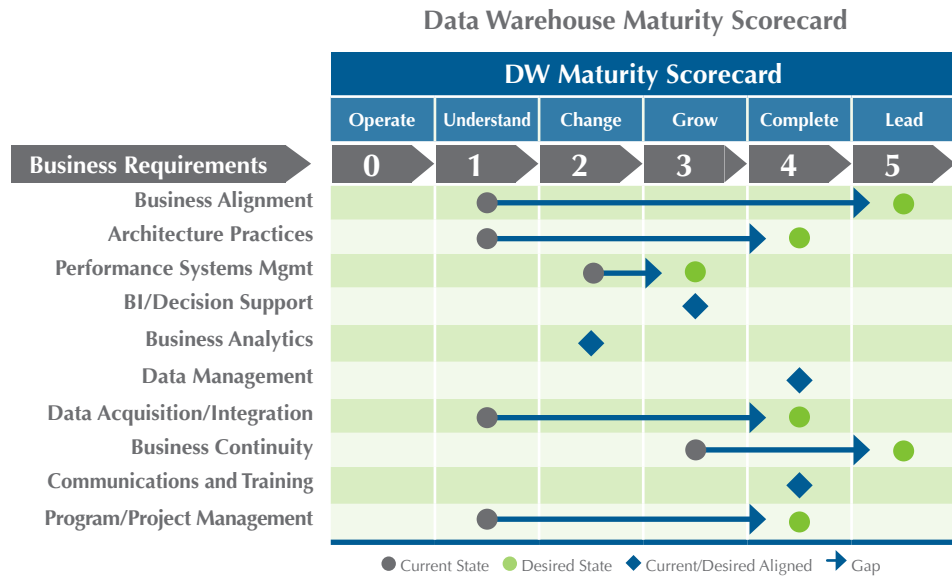
## Who Benefits from an EDW Assessment

An EDW assessment can benefit any organization that wants to understand how it needs to change its technology and business practices so that its EDW objectives can be achieved. Professionals that are involved with the development of different stages of an EDW are usually a part of this assessment, including data architects, developers, project managers, system analysts, enterprise architects, modelers and DBA's. The assessment helps an organization come up with an actionable strategy implementation plan that can be used to develop

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maturity level. Organizations that think their data warehouse needs to be enhanced, and is ready to go through improvement for bringing maximum value to business operations, can benefit from an EDW assessment.

Figure 2: Assessment Executive Scorecard



Data Warehouse Maturity assessment determine the weakest link in your data warehousing chain. Teradata's scorecard defines the multiple stages of maturity for critical data warehousing categories, in this example , the maturity of the Data Acquisition/Integration topics lags other data warehousing characteristics. Immature Data Acquisition/Loading limits overall value because the enterprise data are not integrated into a single data model and system.

## How to Get Started with an EDW Assessment

Data warehouse assessment is the first step of an organization to bring its analytical infrastructure in line with its strategic and operational goals. Well aligned data warehouse and business strategies can lead to better decision-making capabilities in business management personnel. If a company has a data warehouse that is not being used to its maximum capacity, the company can use the assessment to identify the key issues limiting the functionality of its data warehouse. A company can design new and better ways to achieve business excellence in all their operational areas on the basis of a data warehouse assessment.



## Assessment Overview

A data warehouse assessment is a highly technical procedure and requires professional expertise in the field of data warehouse management in order to be carried out. Multiple dimensions of different data warehouse categories are analyzed to determine the evolution of a data warehouse from a single function warehouse to an enterprise level data warehousing process. These dimensions of a data warehouse are controlled and supported by both business and IT functions in an integrated way in order to make it work on the enterprise level effectively. These multiple dimensions are evaluated and scored separately, depending on how well it can support the analytical and informational needs of a business.

With the growth of an organization over time, its informational and analytical needs also evolve, and it requires a more capable and complex data warehouse to support its business practices. However, business functions within an organization don't always evolve at a similar pace, and the data warehouse needs to be aligned with all these different changes taking place. The technology, processes and resources of a company need to be used more strategically so that an Enterprise Data Warehouse can be created.

## Key Analysis Areas

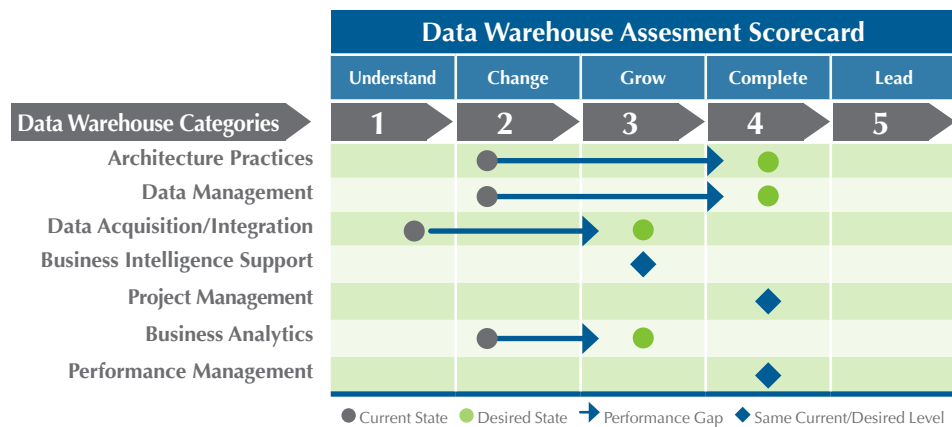
When a data warehouse assessment is started, it is divided into different functional categories, and several dimensions within these categories are then listed and categorized according to their importance within a data warehouse. These categories may include areas like Business Alignment, Data Management, Business Intelligence Support, Architecture Practices, Performance Management, Communications and Training, and Data Acquisition and Integration. Picking up the Data Management category from these, dimensions that can be created then include data quality, semantic data modeling, metadata management, master data management and security of data.

The assessment professionals then set out to collect data regarding each of these dimensions for analysis by conducting interviews and surveys within an organization. The subject matter experts within the company are questioned regarding several performance aspects of each of these dimensions to determine their current level of data warehouse maturity. Based on the analysis that can be attained through information gathering, assessment professionals can determine the current and desired stage of each category, locating where a gap exists. This gap is the opportunity area where the data warehouse needs improvement so that its capabilities can be fully utilized.

Even though all these dimensions are usually evaluated separately, they are all inter-related when it comes to driving maximum value from a data warehouse environment. Therefore, focusing on the high-priority dimensions for improvement will automatically bring some improvement to all other dimensions of the data warehouse as well. Therefore, a company should not be worried that focusing on a single area would lead other areas to lag far behind. They will conform to the new data warehouse maturity levels automatically due to the inter-dependency.

## Using Analysis Scorecards

One of the best ways to record these assessment results is using an Executive Scorecard. In case of making reports that are stored in an organizational application, it can get hard to access them in the ever-changing structure of a growing organization. Moreover, creating these reports in the first place can be a challenge in itself since achieving inter-departmental consistency can be very difficult when the assessment is being done. These scorecards are an ideal way to record the results of a data warehouse assessment in a very well-categorized and somewhat graphical manner that can be easily understood by business management.



## Business Focus along EDW Levels

As discussed earlier, the business focus across different levels of data warehouse maturity varies to a large extent. Along these data warehouse stages, the business and its customers also grow and require a different operational strategy to be managed. From a stage of growth to a position where they lead, businesses progress in the markets as they continue to focus on their data as an asset. On the spectrum of these business focus areas, a data warehouse assessment tells an organization where it currently stands. However, in order to ensure that the objectives of data warehouse assessment are met, functional participation from all business levels is required during and after the assessment.

## Necessary Assessment Questions

In order to carry out a data warehouse assessment, a questionnaire needs to be designed to gain insight to the level of an EDW system. Some questions that can be included in this questionnaire are:

- ▶ How the data warehouse accesses all enterprise data in a consistent and effective method periodically for processing purposes?
- ▶ How organized data is made available to the consuming applications and systems by the warehouse so that it can be used by business management for making decisions and reporting purposes?
- ▶ How the overall quality of business data is measured and monitored across the organization and specifically for the data warehouse?
- ▶ How the company manages user accessibility and security of the data warehouse globally in order to make the system efficient yet safe?
- ▶ Is the data warehouse equipped with the capability of keeping data audit trails in order to track where the data originally comes from within an organization and where it goes for end-user applications?
- ▶ How readily the integrated and synchronized data from a data warehouse is made available within an organization?

A number of other questions can be added to this list depending on the assessment professionals and their data need for making assessment analysis.

Figure 3: Business focus in stage of data warehouse maturity.

DW Maturity					
Operate	Understand	Change	Grow	Complete	Lead
Finance startup; defining and developing product and services	Internal operations; scorecards are product and business unit focused	Customer focused; scorecards are cross-functional or enterprise wide	Market segmentation across products and business units; target markets drive strategies	Performance measured against competitors and customer profitability	Management innovation drives industry standards, practices and productivity
Level 0	Level 1	Level 2	Level 3	Level 4	Level 5

## Why Professional EDW Assessment Services Are Important

Enterprise Data Warehouse assessment is a critical business procedure that should be performed by expert data management professionals in order to keep it effective and cost-efficient. The challenges that the assessment team could face during the process, and the chances of making an error are too significant to be ignored. Data warehouse assessments also require time and monetary resources, which can all go to waste in case of ineffective and inaccurate assessment results. Getting a team of professionals to assess the data warehouse can help companies save a lot of time and effort spent in this assessment procedure. Since they are data management professionals, they understand the assessment requirements and procedures well-enough to carry them out without making errors. This can ensure that the assessment results and recommendations a company gets are trustworthy and actionable.

## Challenges of an EDW Assessment

There are several challenges that are faced during an EDW assessment that are often too difficult to manage if the assessment professionals are not expert enough to handle data management. The biggest challenge of a data warehouse assessment process is the lack of sufficient time that is required to analyze the huge amount of complex organizational data. Usually, an assessment process is expected to end within six weeks, providing accurate and effective assessment results but in large organizations, the data is sometimes too much to be handled within this short time frame. This is one reason why professional data warehouse assessment services should be undertaken by organizations when it's time to get their EDW system analyzed.

The complexity of data and its sources is another major challenge that can act as a hurdle in the assessment procedure. In today's diverse business environment, the main data sources of a company are extremely diverse and complex, and unstructured data in huge amounts is processed more and more to be added to the data warehouse. This increased complexity of data makes it very difficult to maintain consistency and accuracy among the data received by the warehouse from different operational applications.

However, the biggest challenge organizations can face when getting a data warehouse assessment done internally is maintaining objectivity and neutrality. An assessment needs to be carried out with an enterprise perspective, and it requires coordination from all business departments. However, getting internal integration when the data assessment team is based on company personnel themselves can get tricky, causing a lot of problems with the assessment. By getting a team of professionals from outside, organizations can imply that they are looking for a fair assessment of enterprise data.

Figure 5: Findings and recommendations for healthcare provider example.

Dimension being Evaluated	Recommendations	
<b>EDW and BI Architecture Deficiencies</b>	<ul style="list-style-type: none"> <li>▶ There is no enterprise view or single view of data - primary goals of any data warehouse environment.</li> <li>▶ The EDW is used as a data server versus an analytic environment of key business information driving discovery of new opportunities and innovative approaches.</li> <li>▶ The EDW doesn't deliver business information in a standard, consistent, usable form to meet the diverse reporting and analytic needs of the business.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Many business units are extracting large amounts of data from the EDW into departmental data marts and application-specific repositories.</li> <li>▶ This costly proliferation of data marts is driven by the lack of data availability and freshness, missing data, and data quality issues.</li> <li>▶ Significant expertise in SQL and knowledge of underlying data structure is required to navigate the base EDW model.</li> </ul>
<b>Lack of Data Governance</b>	<ul style="list-style-type: none"> <li>▶ There is a need for a comprehensive data governance strategy to address the gaps in business informational needs and technical capabilities.</li> <li>▶ There is a need for a Data Management Framework to address the process, procedures, and technology to effectively manage data assets.</li> <li>▶ Data Quality issues are the #1 driver of data mart proliferation.</li> <li>▶ No formal service levels exist.</li> <li>▶ Business users are frequently the first to detect data errors</li> </ul>	<ul style="list-style-type: none"> <li>resulting in continued loss of credibility in EDW.</li> <li>▶ Lack of discipline in monthly extract, transformation, and load processes results in data integrity issues, unavailability, and user corrective efforts.</li> <li>▶ Business users spend significant effort in cleansing, manipulating, and validating the data versus analyzing and reporting resulting in lost productivity.</li> <li>▶ Data quality issues are adversely impacting ability to meet SLAs.</li> </ul>
<b>Lack of Communications on BI Availability and Usage</b>	<ul style="list-style-type: none"> <li>▶ An EDW demands that business and IT work together to achieve corporate objectives and ensure the right projects are done at the right time to drive optimum business value from the data warehouse investment.</li> <li>▶ The EDW group is focused on implementation goals and not data usability.</li> <li>▶ There is no strategic communications plan or branding for EDW and BI.</li> <li>▶ Business users need more information and education vehicles to learn how to use</li> </ul>	<ul style="list-style-type: none"> <li>the EDW effectively (tips and techniques, best practice examples.)</li> <li>▶ Tool training is adequate, but there's lack of training on the data model - how to locate data, how to access it, and how to interpret it.</li> <li>▶ Users don't understand the EDW's value.</li> <li>▶ The EDW help desk communicates significant outages but little else.</li> <li>▶ Metadata is not complete and is stored in multiple places in multiple formats.</li> </ul>

## How Cogent Data Solutions Can Help Businesses

Why select Cogent Data Solutions? Cogent has a team of expert and skilled data management consultants who have sufficient expertise in handling data management projects. Their exceptional consultant team is facilitated by the most sophisticated technologies and innovations that can provide businesses with data management and warehousing solutions that are effective, accurate and cost-efficient.

Cogent data warehouse assessment solutions can provide companies with a clear and consistent idea of where they stand currently, and how they can grow and manage their data warehouse to take it to an optimal maturity level. Through people, innovation and technology, Cogent Data Solutions can help your business align its EDW system with its strategic business goals.

### Conclusion

Data is one of the most strategic assets of an organization today and it needs to be managed in a systematic way so that it can provide value to the company. Data warehouses have become an important component for every enterprise nowadays since these warehouses optimize the value of a company's crucial business data, making it available for analytics, reporting and decision-making. However, the data warehouse of a company needs to be accessed and improved periodically to ensure it keeps up with the business growth and is being used to its maximum capacity.

Data Warehouse Assessment is conducted by organizations to find out where their data warehouse currently stands among the different warehouse maturity levels. A successful company would already know where it wants to see its data warehouse in terms of maturity, and the assessment helps it analyze the gaps between the current state and desired state. A set of actionable recommendations is then drawn so that this gap can be eliminated and the organization achieves its goal regarding the data warehouse maturity level so that the company can become more competitive and profitable.

## About Cogent Data Solutions

CDS offers best in class analytics solutions so that companies can derive vital data that can help them make better business decisions. As known industry leaders, our integrated and unique solutions allow companies to harness critical information, create value, and maximize meaningful insights.

Companies can benefit from our tradition of regular innovation because we have pioneered leveraging huge amounts of data to develop a perfect understanding of how a business works. Our innovative systems provide lasting data warehousing solutions that help firms attain high performance and establish a competitive advantage in their respective industry.



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